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of contents could be added in which the classification adopted would be shown in synoptic form, and the extinct members of the group could be given their proper place in the general text if not in the keys. At present the fossils are cursorily mentioned in the paragraph headed Paleontology as part of the general account of each family. Hence such fossils as represent families of their own, like *Diprotodon* or *Nototherium*, entirely escape notice. Furthermore, such names of fossils as do occur in the text are not included in the index and are not accompanied by references. This failure to treat the extinct forms in the same manner as those now living is a surprise in view of the comprehensive title *Genera Mammalium*. It is the only serious adverse criticism to which the book appears to be open. But unfortunately it too often happens at present that mammals preserved in rock are treated and thought of as essentially different from those preserved with arsenic or alcohol.

As a book the volume has the attractive character which comes from well selected type, well arranged paragraphs, and well margined pages. It reflects credit on the National Museum of Spain and on the "Junta para ampliación de estudios é investigaciones científicas" under whose auspices it is published.

—G. S. Miller.

Lönnberg, Einar. REMARKS ON SOME SOUTH AMERICAN CANIDÆ. Arkiv för Zoologi, Stockholm, vol. 12, no. 13, pp. 1-18, figs. 1-4. Printed September 3, 1919.

Dr. Lönnberg describes and figures the skull of *Pseudalopex lycoides* (Philippi), basing his account on three specimens collected on the eastern pampas of Tierra del Fuego by Ohlin during Nordenskjöld's expedition of 1895-6. While resembling the skull of *P. magellanicus* from the neighboring mainland in form it is decidedly larger, agreeing with that of the *P. peruanus* (Nordenskjöld) found in a cave near Tirapata on the Peruvian plateau. The Peruvian animal was a contemporary of *Onohippidium*, *Scleridotherium* and other extinct mammals. Apparently it has survived with little or no change on Tierra del Fuego while another species has replaced it on the continent. Such a history would parallel that of microtine rodents now inhabiting Guernsey and the Orkney Islands.

The skull of a domestic dog, probably pure bred, obtained from a party of Yaghan Indians on Tierra del Fuego is also described and figured. It shows no resemblances to any of the known native South American Canidæ, but essentially agrees with the pre-Columbian dogs of Peru. In discussing the characters of this specimen Doctor Lönnberg remarks: "That the so-called domesticated dogs are of polyphyletic origin is nowadays generally admitted". Prevalent though this belief may be it probably rests on no secure basis of facts. Superficial resemblances, in general form, in color, and in quality of fur, to jackals, coyotes, foxes and other wild members of the family may not infrequently be seen in domestic dogs. But in all the specimens that I have examined, representing very diversified breeds, the skull and teeth remain fundamentally true to the type which in wild canids is peculiar to the northern wolves. This type, particularly as regards the cheekteeth, does not represent a primitive condition which might be expected to occur in various members of the family without having any special significance. On the contrary, in respect to the development of a combined cutting and crushing type of carnassials and molars it is the most

highly specialized now in existence. It is, as I have said, not known outside of the restricted subgenus or genus *Canis*. Dogs which were certainly not carried by modern Europeans accompany native man in many parts of the world, Africa, Malaya, Australia and South America, for instance, where no true *Canis* is known to occur now or to have occurred in the past, and all of them apparently retain these generic or subgeneric characters uncontaminated by those of their local relatives with which they have been brought in contact. The best explanation of all these conditions seems to be that dogs were originally domesticated somewhere within the northern area inhabited by true *Canis*, and that they were subsequently taken by man to most of the regions into which he has penetrated. Wherever dogs and wild *Canis* in the restricted sense occur together crossing may take place, and by this process many, possibly all, local forms of the wolf have perhaps contributed to the peculiarities of domestic races. At present, however, there seems to be no satisfactory evidence of polyphyletic origin of any other kind.

—G. S. Miller.

Neuville, H. DE L'EXTINCTION DU MAMMOUTH. *L'Anthropologie*, Paris, vol. 29, pp. 193-212, figs. 1-3. July, 1919.

Few ideas regarding the natural history of mammals are more generally accepted than the belief that the Siberian mammoth was specialized to withstand the hardships of life in a cold climate. As a result of histological study of the skin of two specimens in the Paris Museum Mr. Neuville, however, comes to the conclusion that, far from being fitted to bear extreme cold, the mammoth disappeared mainly because the peculiarities of its integument prevented this necessary adaptation. The skin was covered with dense fur. But the power of fur to resist cold and dampness depends on the presence of the oily substance secreted by the sebaceous glands, and these glands, as they now are in the living elephants, were absent. Snow, sleet and rain could penetrate such fur to the base and "transform it into a veritable mantle of ice." Other peculiarities of the Siberian mammoth which placed the animal at a disadvantage were the great size and unserviceable form of the tusks, the absence of a protective horny thickening of the epidermis, such as occurs in the living elephants, and the tendency of the soles, especially of the hind feet, to throw out horny excrescences which resembled those occasionally seen in menagerie elephants and which must have seriously impeded locomotion. Mammoths probably flourished in Siberia at a time when the forests extended to and beyond the Arctic coast. Their physical limitations were such that they were unable to adapt themselves to the climatic changes which brought on the recession of the forests and the establishment of tundra conditions. With the development of these conditions they therefore gradually became extinct.

Mr. Neuville discusses many subjects that are of general interest: the use of the tusks in the living elephants, the establishment of the thickened horny epidermal layer of the skin through an adaptive process which was probably at first pathological ("the skin of the adult elephant forms a vast corneous papilloma"), the function of sebum and sweat, individual variation in the number of toe nails in elephants, the variable size attained by adult Siberian mammoths, former ideas regarding the causes of extinction.